

Patent Claims

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1. A method of checking the operativeness of an optical transmission link (12) wherein, after line trouble or interruption of transmission

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- a) a first signal transmission device (1) transmits a test signal (S1) to a second signal transmission device (21) via said transmission link (12), and

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- b) said second signal transmission device (21) sends back a response signal (S2) to said first signal transmission device (1) via said transmission link (12) when it has received said test signal (S1), and

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- c) said first signal transmission device (1) evaluates at least one property of said response signal (S2) and compares it with a set value or range of set values for the at least one property known to the device, and

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characterized in that

- d) if a complete or sufficient correspondence of the at least one property evaluated with the predetermined set value or range of set values is detected, recognizes the operativeness of the signal transmission link (12) and starts with the transmission of the signal (S3) to be sent,
 - e) said test signal (S1) and said response signal (S2) differ from each other with respect to the at least one property evaluated.

2. A method according to claim 1, characterized in that said at least one property is the duration of the response signal (S2).
3. A method according to claim 2, characterized in that the duration of the response signal (S2) is longer than that of the test signal (S1).
4. A method according to claim 1, characterized in that said at least one property is a bit pattern of said response signal (S2).
5. A method according to one of claims 1 to 4, characterized in that said response signal (S2) is sent back immediately at the beginning of a reception signal detected.
6. A method according to one of claims 1 to 4, characterized in that said response signal (S2) is only sent back after reception and evaluation of the test signal (S1) received.
7. A method according to claim 6, characterized in that said first signal transmission device (1) sends a response signal (S2) to said second signal transmission device (21) before the transmission of a signal (S3) to be sent is started.
8. A method according to one of claims 1 to 7, characterized in that said test signal (S1) is only emitted if a signal (S3, S4) to be transmitted by said signal transmission device (1, 21) is present.
9. A method according to claim 8, characterized in that said test signal (S1) or said response signal (S2) consists of fragments of the signal (S3) to be transmitted.
10. A transmitting and receiving device (1), particularly an optical converter or repeater amplifier, for optical data transmission,

a) comprising an optical transmitting unit (2) which converts the electric signals into optical signals and which can be connected with a signal transmission link (12) with the output port (2b) thereof, and

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b) comprising an optical receiving unit (4) which converts optical signals into electric signals and which can be connected with a signal transmission link (12) with the input port (4a) thereof, and

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c) comprising an evaluation and control unit (10) which evaluates a signal provided by the optical receiving unit (4) or by a monitoring unit (8) and which triggers the optical transmitting unit (2), wherein said evaluation and control unit (10)

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c1) evaluates the signal provided with respect to the existence of line trouble in said transmission link (12) and, in case line trouble is detected, initiates a check mode of the transmitting and receiving device (1), wherein, in the check mode, said evaluation and control unit (10)

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c11) triggers said optical transmitting unit (2) at given points of time in such a way that the latter sends a test signal (S1) to a second optical receiving unit (25) of a second transmitting and receiving device (21) via said transmission link (12), and

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c12) evaluates a response signal (S2) expected from a second optical transmitting unit (23) of said second transmitting and receiving device (21) as a reaction to said test signal (S1) to see whether this response signal (S2) corresponds to a predetermined set value or range of set values with respect to at least one property to be evaluated, and

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c13) if a complete or sufficient correspondence of said at least one property evaluated with the predetermined set value or range of set values is detected, recognizes the operativeness of said signal transmission link (12), and

c2) if the operativeness is recognized, triggers said optical transmitting unit (2) in such a way that the latter makes it possible to send a signal which is present or to be emitted,

characterized in that

d) said test signal (S1) and said response signal (S2) differ from each other with respect to said at least one property evaluated.

11. A transmitting and receiving device (1, 21) according to claim 10, characterized in that said at least one property of said response signal (S2) emitted by said transmitting unit (2, 23) is the duration thereof.

12. A transmitting and receiving device (1, 21) according to claim 11, characterized in that the duration of said response signal (S2) emitted by said transmitting unit (2, 23) is longer than that of said test signal (S1) emitted by said transmitting unit (2, 23).

13. A transmitting and receiving device (1, 21) according to claim 10, characterized in that said at least one property of said response signal (S2) emitted by said transmitting unit (2, 23) is the bit pattern thereof.

14. A transmitting and receiving device (1, 21) according to one of claims 10 to 13, characterized in that, immediately at the beginning of reception of a reception sig-

nal detected, said transmitting and receiving device (1, 21) receiving the signal sends back said response signal (S2) with the corresponding transmitting unit (2, 23).

5 15. A transmitting and receiving device (1, 21) according to one of claims 10 to 13, characterized in that said transmitting and receiving device (1, 21), which receives a signal with its receiving unit (4, 25), only sends back said response signal (S2) via the respective transmitting unit (2, 23) after it has received and evaluated a test signal (S1).

10 16. A transmitting and receiving device (1, 21) according to claim 15, characterized in that, before the transmission of the signal (S3) to be sent is started, said transmitting unit (2, 23) sends a response signal (S2) to a second signal transmission device (1, 21).

15 17. A transmitting and receiving device (1, 21) according to one of claims 10 to 16, characterized in that the respective transmitting unit (2, 23) only emits said test signal (S1) if a signal (S3, S4) to be transmitted by said transmitting and receiving device (1, 21) is present.

20 18. A transmitting and receiving device (1, 21) according to claim 17, characterized in that said test signal (S1) or said response signal (S2) is created by the evaluation and control unit (10, 30) triggering the respective transmitting unit (2, 23) in such a way that the latter emits said test signal (S1) or said response signal (S2) as a part of a signal (S3, S4) to be emitted.

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